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CONTROL OF THE ALFALFA CATERPILLAR

Leaflet No. 325

U. S. DEPARTMENT OF AGRICULTURE

CONTROL OF THE ALFALFA CATERPILLAR[1]

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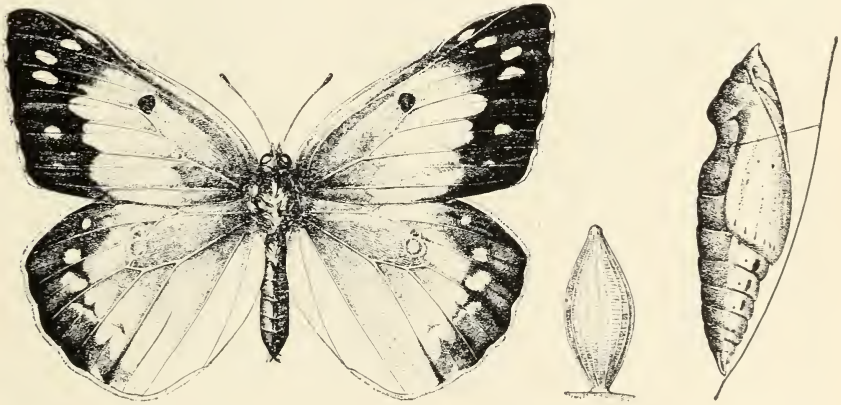
If you grow alfalfa for hay in the Southwest, you can expect the alfalfa caterpillar[2] to infest your crop. Occasionally widespread outbreaks cause serious losses, although in some years the insect may do little damage except perhaps in small areas or individual fields. It may also be present in alfalfa grown for seed or pasture and may occur in other parts of the country, but seldom is very injurious.

You can prevent severe damage from the alfalfa caterpillar by watching for its appearance in your fields, and applying control measures as recommended in this leaflet. You must first know how to recognize the insect.



Female moth, egg, and pupa of the alfalfa caterpillar. (Enlarged.)

HOW TO RECOGNIZE THE ALFALFA CATERPILLAR

The alfalfa caterpillar is the larva of a small butterfly, yellow with a black border on its wings. Yellow spots in this border distinguish the female from the male.

These butterflies appear in the spring—as early as February in southern Arizona, and in April in the San Joaquin Valley of California.

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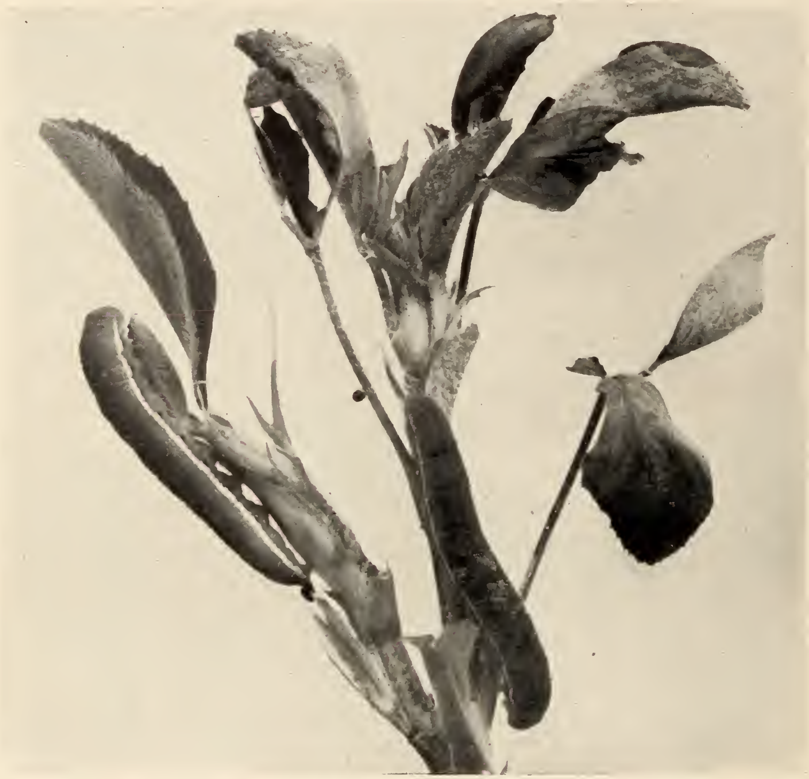
[1] This leaflet supersedes Farmers' Bulletin 1094, The Alfalfa Caterpillar.

[2] *Colias philodice eurytheme* Bdvl.

The females lay their eggs singly on the upper surface of the leaves. These eggs are white at first, but become reddish brown before they hatch. A female may lay as many as 500 eggs in her brief life of about 2 weeks.

After about 3 to 7 days the eggs hatch into small larvae, or caterpillars. These caterpillars feed on the leaves of the alfalfa plant and soon take on a green color. It is difficult to see them when they are stretched out along an alfalfa stalk. Their feeding at first gives the leaves a shot-hole appearance, but eventually the caterpillars may strip the leaves and sometimes even consume the stems.



Alfalfa caterpillars feeding on alfalfa shoots. (Courtesy of California Agricultural Experiment Station.)

When the larvae are full-grown, 12 to 15 days after hatching in warm weather, they attach themselves to alfalfa stalks with the head end up, and change to pale green pupae suspended by slender silken threads. In this position they transform to butterflies and start a new generation. In the Southwest all stages of the pest are often present in the field throughout the winter.

The time required for the life cycle varies with the temperature. In southern Arizona it ranges from about 26 days in the summer to 65 days in the early spring, and there are six or seven generations a year. Farther north the insect develops more slowly and fewer generations are completed annually.

ITS NATURAL ENEMIES ARE YOUR ALLIES

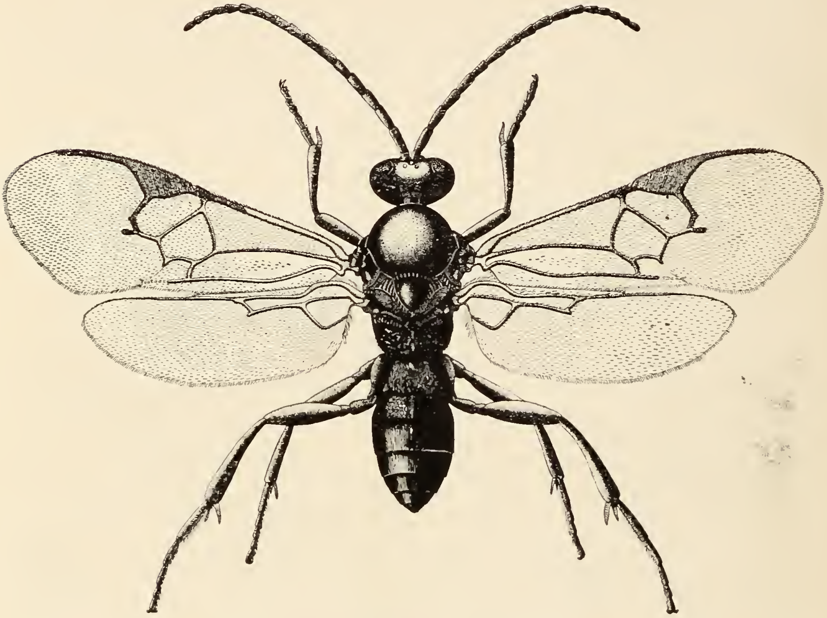
Several natural enemies of the alfalfa caterpillar help you to protect your crop, although you seldom see them.

A virus disease, or wilt, is perhaps your best ally. It attacks both larvae and pupae, and is present in the top soil, stubble, and surface trash probably wherever alfalfa is grown in this country. Caterpillars killed by this disease hang from the plants in decayed masses. If a trained observer can find 15 percent of the caterpillars on your alfalfa killed by this disease by the time the plants are about one-third grown, you may not have to use an insecticide. In experiments at the California Agricultural Experiment Station at Berkeley a spray containing a suspension of this virus has controlled the caterpillars.

Alfalfa caterpillar killed by wilt disease. (Courtesy of California Agricultural Experiment Station.)

Insect parasites are also important allies. There are several of them. One of the most effective is a small wasp known to scientists as *Apanteles medicaginis*. In the hot interior valleys of California this parasite protects a large part of the alfalfa from serious caterpillar damage. You may often see the bright-yellow or white cocoons of this parasite on the leaves. The adults that emerge from these cocoons lay eggs in the young alfalfa caterpillar, and the larvae hatching from these eggs feed inside the caterpillar and destroy it. This parasite is most efficient in the summer in controlling infestations on the fourth and fifth crops. Another parasite is a fly called *Phorocera claripennis*, which lays its eggs in the half-grown alfalfa caterpillar and develops similarly to the wasp. Other parasites lay their eggs in the pupa or egg of the caterpillar.

Several insects kill alfalfa caterpillars by preying on them. The bollworm, also known as the corn earworm and the tomato fruitworm, and a lady beetle are helpful in this respect.



Apanteles medicaginis, an important parasite of the alfalfa caterpillar. (Enlarged.)

DOES THIS PEST THREATEN YOUR ALFALFA?

Look for the small yellow butterflies as soon as your alfalfa is a few inches high. If you see many of them flitting from plant to plant, it would be well to have an experienced observer search for the eggs on the young leaves. If without stooping he can see five of them, egg laying is heavy and a close watch should be kept for the eggs to hatch. When this happens, usually when the alfalfa is about one-third grown, the observer should sweep the plants with a standard insect net at various points throughout the field. If he catches ten or more normal caterpillars per sweep in an average stand, prompt application of an insecticide is needed to prevent damage to the leaves and terminal buds of the alfalfa. However, if most of the caterpillars caught are parasitized, it will probably not be necessary. Caterpillars containing parasites can be distinguished by their distorted shape.

HARVESTING PRACTICES THAT WILL PROTECT YOUR CROP

The time when you cut your alfalfa has a marked effect on the life of the stand and on the yield and feeding value of the hay. However, if alfalfa caterpillars are threatening your crop, you can help protect it by changing your harvesting practices slightly. For recent information on alfalfa production see Farmers' Bulletin 1722, Growing Alfalfa.

Cut early. If you see large numbers of full-grown caterpillars, cut the alfalfa before it becomes severely damaged, and thus save that crop and later ones. If you and other growers in your locality harvest at about the same time, you can prevent egg-laying butterflies from concentrating on a few fields or a small acreage of alfalfa.

Cut close and clean. By cutting alfalfa close to the ground and clean, you will remove food and shelter for the caterpillars and butterflies.

Irrigate heavily. If possible, flood the closely mowed field after you have removed the hay. In the Southwest this flooding together with the heat of the midday sun will kill most of the caterpillars that are left on the bare soil or short stubble.

CONTROL WITH AN INSECTICIDE

You may have to supplement the special harvesting practices with an insecticide. Methoxychlor is the only insecticide now recommended for use on alfalfa grown for hay. Apply a spray at three-fourths pound per acre, or 1 pound in hot desert areas. If you use a 25-percent emulsifiable concentrate, this will mean 1½ or 2 quarts in sufficient water to suit the equipment. Either use a ground sprayer or apply from aircraft.

CAUTION: Methoxychlor is a poison. Handle it with care, according to directions on the container. Store it where children and animals cannot reach it.

CALIFORNIA HAS SUPERVISED CONTROL PROGRAMS

In California programs for supervised control of the alfalfa caterpillar have been in operation for several years. An association of growers is formed in a district comprising at least 8,000 acres of alfalfa. Agricultural experiment station entomologists and county farm advisors within the district act as an advisory board. Each grower is assessed a small fee to help pay an entomologist to survey all alfalfa fields within the district throughout the growing season, to evaluate the amount of natural and cultural control attained, to suggest desirable changes in cultural practices, and to determine if and when an insecticide should be applied.

If the grower decides that he will apply an insecticide to his crop, he does the work himself or hires it done by a commercial operator.

U. S. GOVERNMENT PRINTING OFFICE: 1952

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